Baird Parker Agar Base

M043I

Intended Use:

Recommended for the enumeration of coagulase positive Staphylococci from food and animal feeding stuffs. The composition and performance criteria are as per the specification laid down in ISO 6888-1:1999 / Amd :2018 and ISO 11133:2014 & Amd. 2 :2020 (E).

Composition**

ISO specification -Baird-Parker agar medium	
Ingredients	**g / L**
Pancreatic digest of casein	10.000
Meat extract	5.000
Yeast extract	1.000
L-Glycine	12.000
Sodium pyruvate	10.000
Lithium chloride	5.000
Agar	12 to 22
Final pH after sterilization (at 25°C)	7.2±0.2

Baird Parker Agar Base	M043I
Ingredients	**g / L**
Tryptone #	10.000
HM extract ##	5.000
Yeast extract	1.000
Glycine	12.000
Sodium pyruvate	10.000
Lithium chloride	5.000
Agar	15.000
Final pH after sterilization (at 25°C)	7.2±0.2

**Formula adjusted, standardized to suit performance parameters

Equivalent to Pancreatic digest of casein, ## Equivalent to Meat extract

Supplements to be added after autoclaving per 1000ml of medium	
I Potassium tellurite solution	10ml
II Egg yolk emulsion	50 ml
III Sulfamezathine (sulfamethazine, sulfadimidine) solution (50mg)	25 ml

PTe 1% Selective Supplement (1 ml per vial) (FD052) for 1000ml medium	
Potassium tellurite Concentrate	10 ml
Egg Yolk Emulsion (FD045) per vial for 900ml medium	
Egg yolk emulsion	50 ml
BP S Selective Supplement (FD069) per vial for 1000ml medium	5ml
Sulphamethazine (50 mg)	

Directions

Suspend 58.0 gram in 1000 ml purified / distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C and aseptically add 50 ml concentrated Egg Yolk Emulsion (FD045) and 10 ml sterile PTe 1% Selective Supplement (1 ml per vial) (FD052). If desired add rehydrated contents of 1 vial of BP S Selective Supplement (FD069). Mix well and pour into sterile Petri plates.

Principle And Interpretation

Baird Parker Agar was developed by Baird Parker (1,2) from the Tellurite-glycine formulation of Zebovitz et al (3) for isolation and enumeration of Staphylococci in food and other material since it allows a good differentiation. The composition laid down is as per ISO 6888-1 (4). A high correlation has been found between the coagulase test and the presence of clear zone of lypolysis in this medium, which is due to the lecithinase of Staphylococci that breakdown, the egg yolk. On the other hand, studies show that almost 100% of coagulase positive Staphylococci are capable of reducing tellurite, which produces black colonies, whereas other Staphylococci cannot always do so. The identity of *Staphylococcus aureus* isolated on Baird-Parker Agar must be confirmed with a coagulase reaction. Baird-Parker Agar can also be used to detect coagulase activity by adding fibrinogen plasma (5). Smith and Baird-Parker (6) found that the addition of 50 mg/l Sulphamethazine in the medium, suppresses the growth and swarming of *Proteus* species.

Tryptone, HM extract and yeast extract are sources of nitrogen, carbon, sulphur and vitamins. Sodium pyruvate not only protects injured cells and helps recovery but also stimulates *Staphylococcus aureus* growth destroying selectivity. Lithium chloride and potassium tellurite inhibit most of the contaminating microflora except *Staphylococcus aureus.* The tellurite additive is toxic to egg yolk-clearing strains other than *S.aureus* and imparts a grey to black colour to the colonies. Glycine, pyruvate enhances growth of *Staphylococcus.* With the addition of egg yolk, the medium becomes yellow,

opaque. The egg yolk additive, in addition to provide enrichment, aids in the identification process by demonstrating lecithinase activity (egg yolk reaction). A clear zone and grey-black colonies on this medium are diagnostic for coagulase positive Staphylococci. Upon further incubation, an opaque zone is developed around colonies, which can be due to lipolytic activity. Testing of medium is carried out as per ISO 11133:2014 (7)

Type of specimen

Food samples and animal feeding stuffs

Specimen Collection and Handling

For food samples, follow appropriate techniques for sample collection and processing as per guidelines (4,7).
After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations

1. The identity of *Staphylococcus aureus* isolated on Baird-Parker Agar must be confirmed with a coagulase reaction.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Quality Control

Appearance
Cream to yellow homogeneous free flowing powder
Gelling
Firm, comparable with 1.5% agar gel.
Colour and Clarity of prepared medium
Basal medium: Yellow coloured clear to slightly opalescent gel. After addition of Egg Yolk Emulsion and Tellurite solution: Yellow coloured opaque gel forms in Petri plates.
Reaction
Reaction of 5.8% w/v aqueous solution at 25°C. pH : 7.2±0.2
pH
7.00-7.40
Cultural Response
Productivity :Cultural response was observed with added Egg Yolk Emulsion (FD045) and sterile PTe 1% Selective Supplement (FD052) after an incubation at 37±1°C for 24±2 to 48 ±2 hours. Recovery rate is considered as 100% for bacteria growth on Reference medium - Soyabean Casein Digest Agar (Tryptone Soya Agar).
Specificity : Cultural response was observed with added Egg Yolk Emulsion (FD045) and sterile PTe 1% Selective Supplement (FD052), after an incubation at 37±1°C for 24-48±2 hours.
Selectivity : Cultural response was observed with added Egg Yolk Emulsion (FD045) and sterile PTe 1% Selective Supplement (FD052), after an incubation at 37±1°C for 48±2 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Characteristic reaction
Productivity				
Staphylococcus aureus subsp. *aureus* ATCC 6538 (00032*)	50 -100	luxuriant	>=50 %	Black or grey colonies with clear halo (egg yolk clearing reaction
Staphylococcus aureus subsp. *aureus* ATCC 25923 (00034*)	50 -100	luxuriant	>=50 %	Black or grey colonies with clear halo (egg yolk clearing reaction
Selectivity				
Escherichia coli ATCC 8739 (00012*)	>=10^4	inhibited		
Escherichia coli ATCC 25922 (00013*)	>=10^4	inhibited		
Specificity				
Staphylococcus epidermidis ATCC 12228 (00036*)	10^3 -10^4	growth		Black or grey colonies without egg yolk clearing reaction
Staphylococcus saprophyticus ATCC 15305 (00159*)	10^3 -10^4	growth		Black or grey colonies without egg yolk clearing reaction

Key : (*) - Corresponding WDCM numbers

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques (8,9).

Reference

1.Baird-Parker A. C., 1962, J. Appl. Bacteriol., 25:12.

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3.Zebovitz E., Evans J. B. and Niven C.F., 1955, J. Bacteriol., 70:686 .

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5.Beckers N. J. et al, 1984, Can. J. Microbiol., 30:470.

6.Smith B. A. and Baird-Parker A.C., 1964, J. Appl. Bacteriol., 27:78.

7.Microbiology of food, animal feeding stuffs and water- Preparation, production,storage and performance testing of culture media, EN ISO 11133:2014 & Amd. 2 :2020 (E).

8.Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.

9.Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.

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